

CLAIMS

1. A method, comprising:

- 5 receiving a user request into a coordinating device;
processing with said coordinating device a service description
information for each of a plurality electronic devices available ad-hoc to identify
functionally responsive combinations of electronic devices capable of servicing said
user request;
calculating a score for each such functionally responsive combination,
10 said calculating using user preference information;
configuring said available electronic devices into an ad-hoc combination
according to said scores; and
servicing said user request with said ad-hoc combination.

15 2. The method of claim 1, further comprising:

- building said service description information for a respective device from
a service identifier, which is representative of a function which said device is able to
provide; at least one required service identifier, each at least one required service
identifier being representative of services that said respective device requires to provide
20 said function; device attribute information, which is representative of characteristics of
said device; and attribute values, which are representative of a relative score for a
respective device attribute.

3. The method of claim 2, further comprising:

- 25 including in said identification of functionally responsive combinations
identifying devices having a service identifier which corresponds to said user request
and thereafter combines each of said identified devices with other devices, each other
device having a service identifier which matches a required service identifier of a
respective identified device.

30

4. The method of claim 3, further comprising:

- computing a separate device score for each device included in a
functionally responsive combination, such that for each device said computing uses said

device's attribute values and weighs said attribute values according to said user preference information.

5. The method of claim 4, further comprising:

5 weighting said attributes values with a device-level policy comprising a vector of weights which encodes said user preference information for said device attributes.

6. The method of claim 3, further comprising:

10 selecting a device-level policy from a predefined group of device-level policies.

7. The method of claim 6, further comprising:

 computing said device score as:

15
$$DS(D, DP) = \sum_{i=1}^d aw_i(DP) * D(v_i)$$

 where:

DS is said device score for device D according to a device-level policy DP ;

d is said number of attributes for said device;

20 $aw_i(DP)$ is said weight of attribute i according to policy DP ; and
 $D(v_i)$ is said device's value (v_i) for attribute i .

8. The method of claim 4, further comprising:

25 using said device scores for each device in a functionally responsive combination such that each device score is weighting according to said user preference information.

9. The method of claim 8, further comprising:

30 using a parameter which is indicative of said availability of said device.

10. The method of claim 9, further comprising:

encoding a vector of weights for said user preference information for said device's in a combination.

11. The method of claim 9, further comprising:

5 computing for each functionally responsive combination said combination score as:

$$AS(A, AP) = \sum_{i=1}^n sw_i(D, AP) * e(D_i) * DS_i(D, DP_i)$$

where:

10 *A* is a particular combination;
 AP is a combination-level policy;
 AS is said combination score;
 n is said number of devices that are included in said particular combination;
 sw_i is said weight assigned to said device of type *i* according to said
15 combination policy *AP*;
 DS_i is said unweighted device score for device *D_i*; and
 e(D_i) is a percentage indicating said availability of said device *D_i*.

12. A programmable apparatus for selecting a combination of electronic devices
20 from a plurality of available electronic devices for performing a user request, each electronic device having service description information associated therewith, said apparatus comprising:

 user interface means for receiving a user request;
 a processor for said service description information for said available
25 electronic devices to identify functionally responsive combinations of electronic devices, each functionally responsive combination responsive said user request; and for calculating a score for each functionally responsive combination, said calculating using user preference information; and for selecting one of said functionally responsive combinations according to said scores.

30

13. The apparatus according to claim 12 wherein said service description information for a respective device comprises:

a service identifier, which is representative of a function which said device is able to provide;

required service identifier, which is representative of services that said device requires to provide said function;

5 device attribute information, which is representative of characteristics of said device; and

attribute values, which are representative of a relative score for a respective device attribute.

10 14. Computer data storage media having programmed thereon computer software instructions to make a programmable device execute said following steps:

receiving a user request;

processing service description information for each of plural available devices to identify functionally responsive combinations of devices, each functionally
15 responsive combination responsive said user request;

calculating a score for each functionally responsive combination, said calculating using user preference information; and

selecting one of said functionally responsive combinations according to said scores.

20

15. Computer data storage media according to claim 14 wherein said computer software instructions comprise run time software modules and configuration software modules, said run time modules comprising:

a user interface module for receiving said user request;

25 a service registration and look up module for registering said service description information for said available devices;

an aggregator module for identifying said functionally responsive combinations of devices;

30 an evaluator module for calculating said scores for each of said functionally responsive combinations;

and wherein said configuration modules include:

a service repository for storing said service description information for each registered device;

a policy repository for storing policy information; and
user preference history files for storing historical user preference and contextual
information.